

MNS iPDU

intelligent Power Distribution Units (iPDU's)



MNS - Global system design

The renowned ABB MNS system, manufactured for over 30 years to exacting standards in over 26 countries, now includes the latest in intelligent Power Distribution Unit (iPDU) technology.

The reliability behind ABB's iPDU's is attributed to a high degree of testing that exceeds many of the international standards covering up-time of power critical units.

The iPDU is designed to allow controlled live working on critical elements of the unit, without endangering personnel safety. Operators and facility management teams can carry out maintenance regimes on a preventative rather than reactive basis.

The design also allows for a phased asset investment, as the PDU can be expanded as the client's power needs grow.

Switchgear evolution

ABB is the global leader for low voltage switchgear with over 1.2 million MNS cubicles delivered worldwide since the inception of this system in 1973. ABB's history in switchgear can be traced back even further, to the 1890's when we first manufactured switchgear systems in Sweden.

With these credentials it is no surprise that the MNS system is the benchmark for operational safety, reliability and quality.



ABB Low Voltage Systems

ABB Low Voltage Systems is the global leader in the supply of low voltage switchgear, motor control centres and iPDU's in high resilience infrastructure, data centre, hospitals and process plants. ABB holds certification for quality assurance environmental and health and safety standards, to ISO9001, ISO14001 and ISO18001 respectively.

Product range

From its 10,000 square metre manufacturing facility, based in Sunderland, ABB is able to supply the following:

- MV packaged substations
- LV main power switchboards
- Conventional and intelligent motor control centres
- Distribution units and UPS switchboards
- Sub distribution switchboards
- MCCB panelboards

Turnkey solutions

To complement its systems business, ABB has a dedicated team that can offer project management of turnkey solutions incorporating:

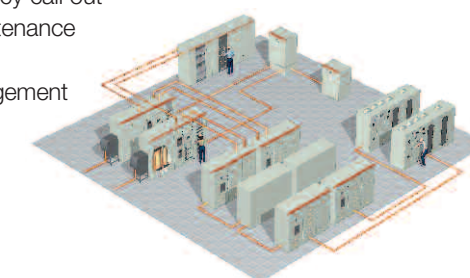
- Medium voltage switchgear
- Power transformers
- Busbar trunking and rising busbar
- Installation and pre-commissioning
- Power factor correction equipment and power quality filters
- Cabling
- Containerised substations

Service, maintenance & support

To ensure that equipment remains safe to operate and to minimise the risk of unexpected breakdown, cost effective packages can be provided that are specifically tailored to clients' individual needs.

These include:

- Retrofits and upgrades
- 24/7 emergency call out
- Planned maintenance
- Training
- Spares management



The Challenge

Conventional switchgear used in power distribution networks for commercial installations is generally unsuitable for large data processing systems due to the additional demands placed on the supply network and the need for greater useable or lettable floor space. For example, high value computer installations often require all data processing operations of national and multi-national corporations to be concentrated in central locations. These data centres operate on a 24 hour 365 day basis.

System downtime or "green periods" are extremely rare in the data centre environment; consequently, traditional routine maintenance becomes unrealistic. Data corruption or loss following an unscheduled power interruption of just a few minutes, can take weeks to retrieve. The effect on operations and revenue generation can be serious so the need for ultimate reliability in the power distribution system is of paramount importance.

The Solution

An iPDU from ABB provides key solutions for data centres or computer rooms including:

- A highly reliable and proven design.
- Tested to stringent international standards.
- The need for minimal or zero routine maintenance.
- Safe methods of live exchange and/or addition of hardware.
- A flexible system that allows growth to match your client base.

The iPDU represents the culmination of 15 years experience in the most demanding of secured supply environments with some of the world's leading users, such as financial institutions, data centres, supermarkets and hospitals.

The Benefits

ABB's iPDU ensures traditional maintenance activities have been "designed out". Typically this equates to maintenance periods in excess of five years and greater emphasis placed on non-intrusive surveillance.

In large, continuously running data centres, processing equipment has to be changed periodically, whether to expand or update the networks, or to systems and facilities managers have to oversee the regular demand to add or remove hardware without disrupting the operation of the centre.

The iPDU allows large parts of the system to be worked upon, whilst adjacent circuits remain live, thereby removing a major obstacle to planning and executing changes to the network.

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1. Static transfer switch (STS)

Static Transfer Switches from various manufacturers can be easily integrated using solid tested busbar connections.

2. Incoming/outgoing and by-pass breakers ("wrap arounds")

Compact configurations of incoming, maintenance bypass and outgoing fixed or withdrawable moulded case circuit breakers (MCCBs).

3. Incoming cable section

Fully shrouded incoming terminals. Offering maximum area for glanding. Top/bottom cable connections available.

4. Monitoring, alarms, trend & communications

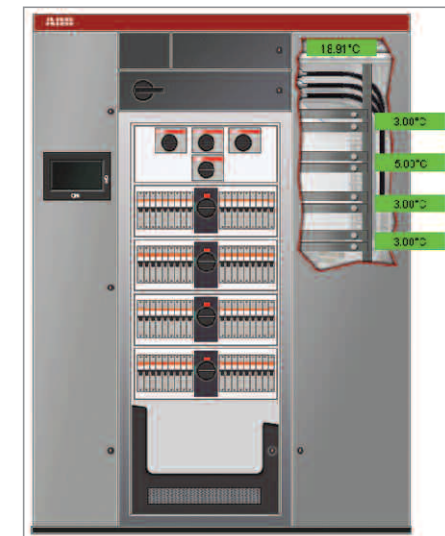
(See table below)
Tailored to suit client requirements, the /PDU can offer a full monitoring, trend and communication solution.

5. Active harmonic filter

Active harmonic filtration units can be installed within the /PDU, complete with communication ports and metering facilities. The filter is fitted nearer to the load to reduce the need for higher rated busbar and devices upstream.

6. Plinths

Data centres often incorporate a raised floor. ABB's /PDU has an optional plinth available with adjustable feet and tile support.



Thermal monitoring

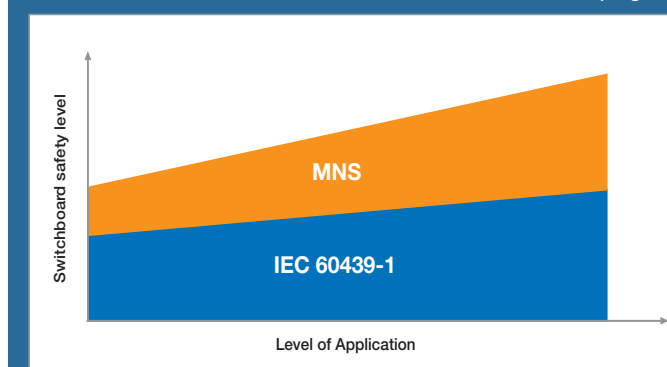
FEATURE	BENEFITS
Monitoring Current flow Temperature Busbars, power contacts, cubicles, viewing windows for imaging	<ul style="list-style-type: none"> Provides tariff metering of individual clients circuits Enhances a preventive maintenance regime by offering 24/7/365 measurement of critical points Pre-alarm/trip indication as standard
Trending Waveform capture Harmonic analysis Current & voltage values	<ul style="list-style-type: none"> Analysis for 24/7 preventive maintenance Year round records of all activity Historical records providing clear audit trail
Communications RS485 with RG45 connection fieldbus/modbus/-open protocol TCP/IP wireless interface web based monitoring &/or control	<ul style="list-style-type: none"> Full integration with most ENMS (Energy Network Management System) or BMS (Building Management or Monitoring Systems) Allows for remote monitoring and control

Testing and certification

The ABB MNS system is a type-tested switchgear assembly (TTA) in accordance with IEC 60439-1. The fulfilment of all instructions of IEC 60439-1 assures a basic level for personnel and system protection. With MNS, ABB exceeds these levels as a standard.

The MNS low voltage switchgear has been subjected to extensive type tests in compliance with the standards. In order to ensure the highest degree of safety, ABB continues to conduct tests within a continuous development programme. These tests are based on the most critical representative applications of the entire product or performance range of the switchgear with respect to the test standard. The results of these tests are applicable to the various low voltage switchgear and control gear assemblies (TTA) in accordance with IEC 60439-1; DIN EN 60439-1 / VDE 0660 Part 500.

corresponding to the normal service arrangement. An arc is then initiated within the switchgear, the point of ignition is chosen to produce the most stress on the assembly. There are five criteria observed for the test, in line with its 'Safety Plus' statement ABB ensures that all five are met. In addition to these five criteria ABB also meets the addition plant protection criteria as detailed in VDE 0660 part 500.

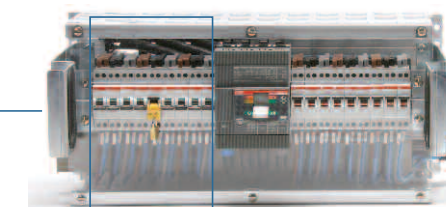
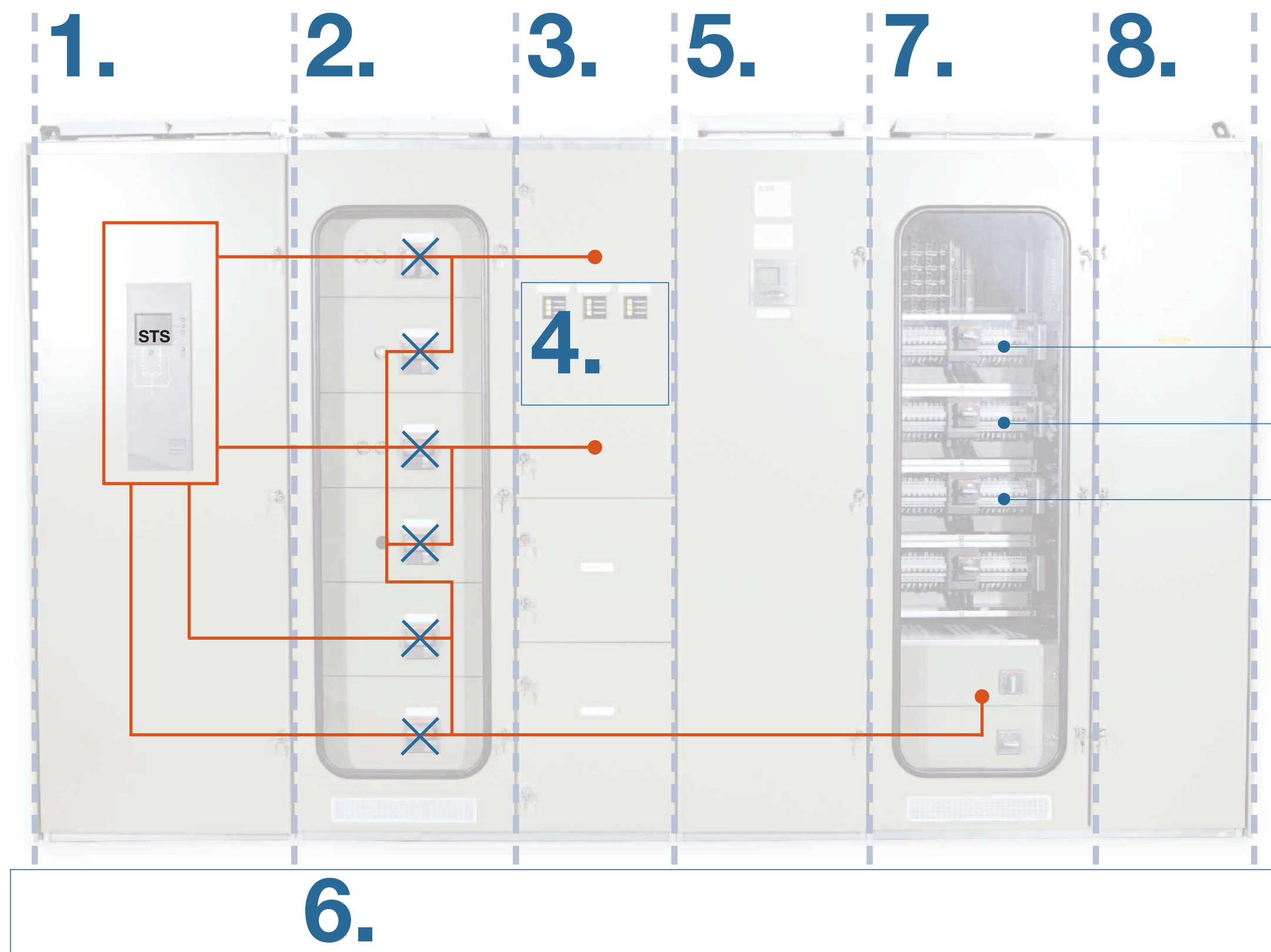


In addition to the above specifications, ABB adopted as a standard IEC 61641 for testing under conditions of arcing due to an internal fault. To meet the requirements of IEC 61641, the switchgear is connected and supplied

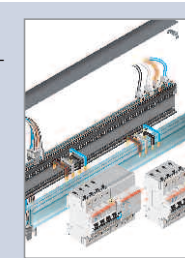


iPDU infrastructure

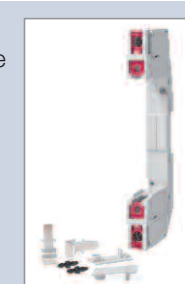
Client driven solutions



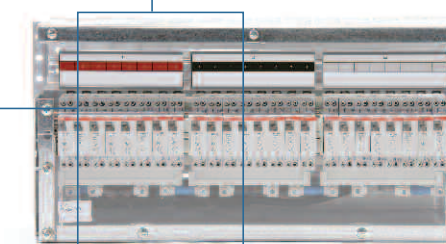
ArTu system - the use of plug-in technology with the ability to change devices or phase orientation. If phase loads are out of balance you can readdress by the use of the ArTu link system.



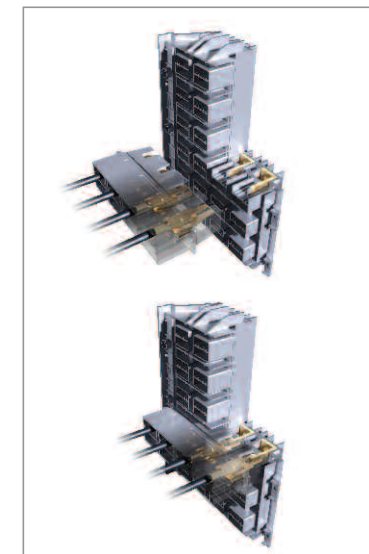
S2C system - fully withdrawable with the board still live. Allows entire data floors to remain in operation. Utilising standard MCBs they can also be locked in the on position. Speedy changeover or up-rating of the device leads to zero downtime.



Fuses - Fuse holders up to 125A on DIN RAIL with fuse blown indicator and lockable positions are available for rapid replacement of cartridge.



T-Max MCCB - Full insertion and withdrawable capabilities when live allow PDU extensions to further 'satellite' outgoing sections without downtime.



7. Outgoing section
The outgoing section incorporates different modules.
Multi-Function Wall (MFW)
A "Plug & Play" system that allows the **safe, quick and uncomplicated** removal and replacement of functional devices from live distribution bars. These bars are embedded in an insulated labyrinth known as a Multi-Function Wall (MFW) offering:-

- High shortcircuit withstand ratings
- Creepage distances that exceed standard requirements
- A busbar system designed to be maintenance free and approved for installation where periodic maintenance inspections are greater than five years.



Power contact
ABB's power contact connector in conjunction with the MFW allows devices and modules to be connected to the main busbar system safely offering:-

- On-line growth and management of the client's asset
- Easy modifications and maintenance
- Phase-to-phase isolation before making contact with the busbar through MFW
- Personnel safety and asset protection through superior design
- Operational life cycle up to 1000 insertions (independently certified)
- Touch proof (IP 2x) with no moving parts
- Arc-resistant firewall to the busbar compartment



MCBs, MCCBs & Fuses
By utilising the 'Plug & Play' concept the client is able to mix and match different breaker and breakerless solutions including:-

- Miniature Circuit Breakers
- Moulded Case Circuit Breakers up to 630A
- Fuses with "blown" indication

 Single or multi-pole devices can be fitted in several client specified configurations including the S2C adaptor for "live" removal of individual MCB's
 * = Under controlled conditions and in line with HSE Guidelines

8. Terminal arrangements
Various methods of fully shrouded cable termination are available including:

- Direct device connection
- Standard DIN Rail mounted terminals
- CEE 'Commando' style Sockets
- Individual Dual Plug & Socket connections
- Clean and dirty earth bars

To find out more about MNS iPDU



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